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EXAMINER	
RUDE, TIMOTHY L	
ART UNIT	**PAPER NUMBER**
2883	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/901,079	LEE ET AL.	
	Examiner	Art Unit	
	Timothy L Rude	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

1. No claims are amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 7-16, and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (APA) in view of Sakamoto et al (Sakamoto) USPAT 6,507,382 B1 and Kim USPAT 5,581,382.

As to claim 1, APA discloses an in-plane switching liquid crystal display device comprising:

first and second substrates, 30 and 32 respectively;

a gate line, 50, arranged in one direction on the first substrate;

a common line, 54, arranged on the first substrate;

a gate insulation layer, 70, on the first substrate;

a data line, 62, on the gate insulation layer;

a first passivation layer, 74, on the gate insulation layer, and a plurality of common electrodes, 54a, an insulating layer over the common electrodes, and a plurality of pixel electrodes, 66a, on said insulating layer, and

a liquid crystal layer between the first and second substrates..

APA does not explicitly disclose a common electrode 1) in contact with the first passivation layer; a second passivation layer on the first passivation layer;
a pixel electrode on the second passivation layer, and 2) wherein the second passivation layer is an inorganic material.

Sakamoto teaches 1), (entire patent, especially embodiment 2) in Drawings 3(a) and 3(b), the use of a common electrode, 3 (col. 8, line 23 through col. 10, line 7), on a protective overcoat layer, 12 (Applicant's the first passivation layer); an interlayer film, 13 (Applicant's second passivation layer) on the first passivation layer; and
a pixel electrode, 14, on the second passivation layer to allow for manufacture of a color display that prevents color unevenness for better display performance (col. 4, lines 1-2).

Sakamoto is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to move the plurality of common electrodes of APA to be on and in contact with the first passivation layer; a second passivation layer on the first passivation layer; and
a pixel electrode on the second passivation layer to allow for easy manufacture of a color display that prevents color unevenness for better display performance.

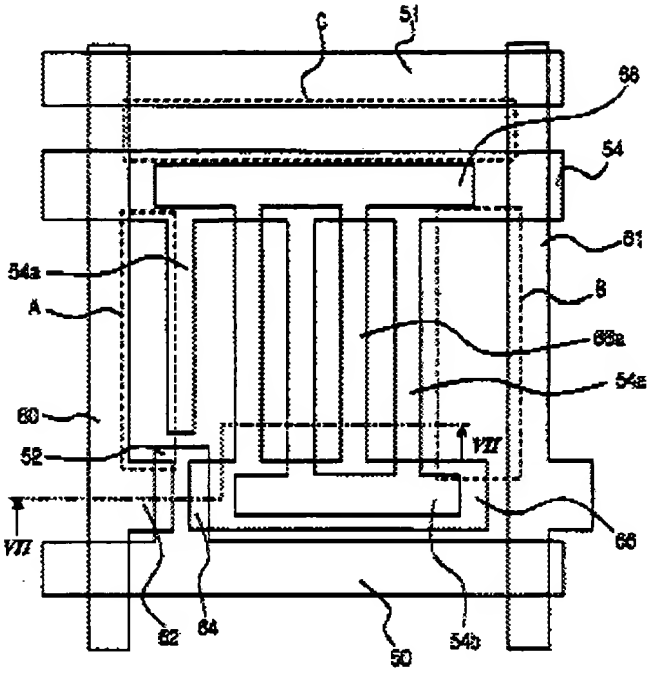
Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA with the common electrode on the first passivation layer; a second passivation layer on the first passivation layer; and a pixel electrode on the second passivation layer of Sakamoto to allow for manufacture of a color display that prevents color unevenness for better display performance.

Kim teaches 2) wherein the second passivation layer is a nitride layer (Applicant's inorganic material) to prevent moisture penetration and resulting damage due to said moisture penetration (improves display service life) (col. 5, lines 30-48).

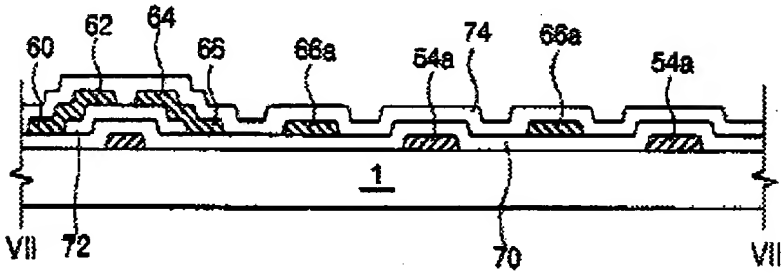
Kim is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a second passivation layer that is an inorganic material to prevent moisture penetration and resulting damage due to said moisture penetration to improve display service life.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA with a second passivation layer that is an inorganic material of Kim to prevent moisture penetration and resulting damage due to said moisture penetration to improve display service life.

APA, Figure 6:



APA, Figure 7D:



Sakamoto :

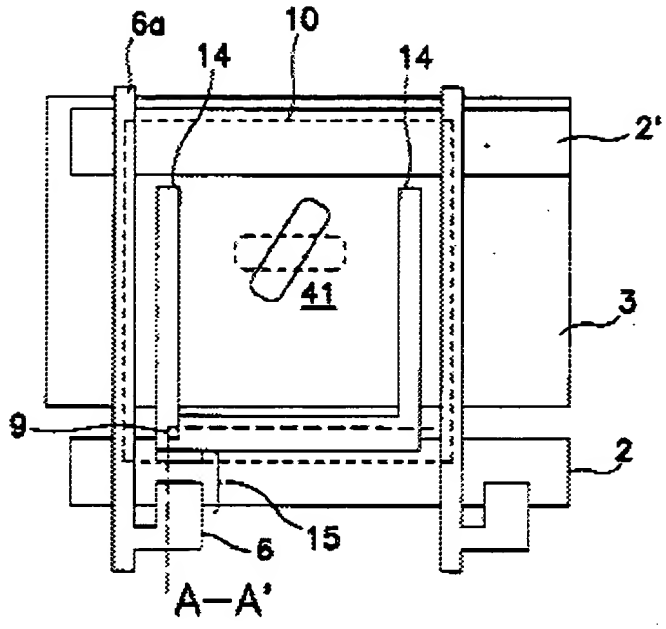
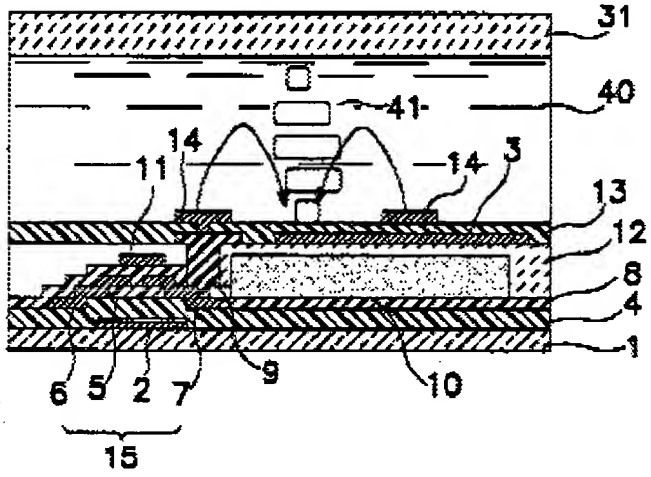


FIG. 3(a)



As to claim 7, APA discloses a device wherein the common line, 54, is parallel with the gate line, 50, and spaced apart from the gate line.

As to claim 8, APA discloses a device wherein the data line, 60, is perpendicular to the gate line, 50.

As to claim 9, APA discloses a device further comprising a thin film transistor at a crossover point of the gate line, 50, and the data line, 60.

As to claim 10, APA discloses a device wherein the thin film transistor includes a gate electrode, 52, an active layer, 72, and source, 62, and drain, 64, electrodes.

As to claims 11 and 12, APA in view of Sakamoto and Kim disclose the device of claim 1.

APA in view of Sakamoto and Kim do not explicitly disclose a device wherein the first passivation layer includes a plurality of common line contact holes and wherein each common electrode is electrically connected with the common line through the corresponding common line contact hole.

Sakamoto, as combined above, discloses a device wherein the first passivation layer includes a contact hole for connecting the pixel electrode (per Figure 3(b)).

Note that in considering a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom (MPEP 2144.01). Also, mere duplication of parts is not patentably distinct. Examiner considers Sakamoto to render obvious the need to provide contact holes as needed to electrically connect the

common electrodes of Sakamoto on the first passivation layer to the common line of APA that is below said first passivation layer.

Sakamoto is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add contact holes in the first passivation layer as needed to connect a plurality of common electrodes to the common line of APA.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the passivation layer of APA in view of Sakamoto and Kim with the contact holes of Sakamoto to connect a plurality of common electrodes to the common line.

As to claims 13 and 14, Sakamoto discloses a device wherein the second passivation layer includes a drain contact hole to electrically connect the pixel electrode to the drain (per Figure 3(B)).

As to claim 15, APA discloses a device wherein each pixel electrode is arranged between the adjacent common electrodes.

As to claim 16, the steps of manufacturing comprising forming would have been obvious given the structure above.

As to claim 24, APA discloses the use of Al, Cr, Mo, and W for the first and second metal layers (Specification, Page 6, lines 10-11). The steps of manufacturing

comprising forming, depositing, and patterning would have been obvious given the structure above.

As to claims 25-29, the steps of manufacturing comprising forming, depositing, patterning, and making electrically connected, would have been obvious given the structure above.

3. Claims 2-3 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sakamoto and Kim, as applied to claim 1 above, and further in view of Shin et al (Shin) USPAT 6,356,328 B1.

As to claims 2 and 3, APA in view of Sakamoto and Kim disclose the device of claim 1.

APA in view of Sakamoto and Kim do not explicitly disclose a device wherein the common and pixel electrodes are formed of the transparent conductive material.

Shin teaches the use of common and pixel electrodes formed of the transparent conductive material ITO to increase the aperture ratio and transmittance of the LCD (Abstract and col. 3, lines 37-47).

Shin is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add common and pixel electrodes formed of the

transparent conductive material ITO to increase the aperture ratio and transmittance of the LCD.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA in view of Sakamoto and Kim with the common and pixel electrodes formed of the transparent conductive material ITO of Shin to increase the aperture ratio and transmittance of the LCD.

As to claims 17-20, the steps of manufacturing comprising depositing and patterning would have been obvious given the structure above.

4. Claims 4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sakamoto and Kim, as applied to claim 1 above, and further in view of Chang et al (Chang) USPAT 6,163,355.

As to claim 4, APA in view of Sakamoto and Kim disclose the device of claim 1.

APA in view Michiaki do not explicitly disclose a device wherein the gate insulation layer and the second passivation layer are one of Silicon Nitride (SiN_X) and Silicon Oxide ($Si0_2$).

Chang teaches that SiN_X is used as a passivation layer in a conventional LCD.

Chang is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use SiN_X as an art-recognized material suitable for the intended purpose of forming a passivation layer.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA in view of Sakamoto and Kim with SiN_X of Chang as an art-recognized material suitable for the intended purpose of forming a passivation layer (MPEP 2144.07).

As to claim 23, the steps of manufacturing comprising forming, depositing, and patterning would have been obvious given the structure above.

5. Claims 5-6 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sakamoto and Kim, as applied to claim 1 above, and further in view of Akiyama et al (Akiyama) USPAT 6,414,729 B1.

As to claims 5 and 6, APA in view of Sakamoto and Kim disclose the device of claim 1.

APA in view of Sakamoto and Kim do not explicitly disclose a device wherein the first passivation layer is formed of an organic material, wherein said organic material is one of benzocyclobutene (BCB) and acryl.

Akiyama teaches the use of an organic resin film such as BCB for the insulation layers (col. 9, lines 59-67) to shield the liquid crystal layers from the scanning and signal lines (col. 2, lines 22-24).

Akiyama is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use of BCB for the insulation layers to shield the liquid crystal layers from the scanning and signal lines.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA in view of Sakamoto and Kim with the BCB insulation layers of Akiyama to shield the liquid crystal layers from the scanning and signal lines.

As to claims 21 and 22, the steps of manufacturing comprising forming, depositing, and patterning would have been obvious given the structure above.

6. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sakamoto and Kim, as applied to claims 1-29 above, and further in view of Wakagi et al (Wakagi) USPAT 6,300,995 B1.

As to claim 30, APA in view of Sakamoto and Kim disclose the device above, wherein the first passivation layer is Applicant's second insulation layer and the second passivation layer is Applicant's third insulation layer.

APA in view of Sakamoto and Kim does not explicitly disclose a device wherein a plurality of first contact holes through the first and second insulation layers over the common line; and a plurality of common electrodes on the second insulation layer, wherein the common electrodes contact the common line via the first contact holes.

Wakagi teaches in Figures 6 and 7 a device wherein a plurality of first contact holes through the first and second insulation layers over the common line; and a plurality of common electrodes on the second insulation layer, wherein the common electrodes contact the common line via the first contact holes to reduce losses in the driving voltage applied to the liquid crystal, by providing an active matrix substrate in which degradation of the metal electrode is prevented in a liquid crystal display device (col. 2, lines 6-10).

Wakagi is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a plurality of first contact holes through the first and second insulation layers over the common line; and a plurality of common electrodes on the second insulation layer, wherein the common electrodes contact the common line via the first contact holes to reduce losses in the driving voltage applied to the liquid crystal, by providing an active matrix substrate in which degradation of the metal electrode is prevented in a liquid crystal display device.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA in view of Sakamoto and Kim with a plurality of first contact holes through the first and second insulation layers over the common line; and a plurality of common electrodes on the

second insulation layer, wherein the common electrodes contact the common line via the first contact holes of Wakagi to reduce losses in the driving voltage applied to the liquid crystal, by providing an active matrix substrate in which degradation of the metal electrode is prevented in a liquid crystal display device.

As to claim 31, APA discloses, in Figure 6, pixel electrodes electrically communicated with one another via a transverse pixel electrode perpendicular to the common electrodes.

7. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sakamoto, Kim, and Wakagi, as applied to claims 1-31 above, and further in view of Shin.

As to claim 32 and 33, APA in view of Sakamoto, Kim, and Wakagi disclose the device above.

APA in view of Sakamoto, Kim, and Wakagi do not explicitly disclose a device wherein the common and pixel electrodes are formed of the transparent conductive material.

Shin teaches the use of common and pixel electrodes formed of the transparent conductive material ITO to increase the aperture ratio and transmittance of the LCD (Abstract and col. 3, lines 37-47).

Shin is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add common and pixel electrodes formed of the transparent conductive material ITO to increase the aperture ratio and transmittance of the LCD.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA in view of Sakamoto, Kim, and Wakagi with the common and pixel electrodes formed of the transparent conductive material ITO of Shin to increase the aperture ratio and transmittance of the LCD.

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sakamoto, Kim, and Wakagi, as applied to claims 1-31 above, and further in view of Chang.

As to claim 43, APA in view of Sakamoto, Kim, and Wakagi disclose the device above.

APA in view of Sakamoto, Kim, and Wakagi do not explicitly disclose a device wherein the gate insulation layer and the second passivation layer are one of Silicon Nitride (SiN_X) and Silicon Oxide ($Si0_2$).

Chang teaches that SiN_X is used as a passivation layer in a conventional LCD.

Chang is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use SiN_X as an art-recognized material suitable for the intended purpose of forming a passivation layer.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA in view of Sakamoto, Kim, and Wakagi with SiN_X of Chang as an art-recognized material suitable for the intended purpose of forming a passivation layer (MPEP 2144.07).

9. Claim 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sakamoto, Kim, and Wakagi, as applied to claims 1-31 above, and further in view of Akiyama.

As to claims 35 and 36, APA in view of Sakamoto, Kim, and Wakagi disclose the device above.

APA in view of Sakamoto, Kim, and Wakagi do not explicitly disclose a device wherein the first passivation layer is formed of an organic material, wherein said organic material is one of benzocyclobutene (BCB) and acryl.

Akiyama teaches the use of an organic resin film such as BCB for the insulation layers (col. 9, lines 59-67) to shield the liquid crystal layers from the scanning and signal lines (col. 2, lines 22-24).

Akiyama is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use of BCB for the insulation layers to shield the liquid crystal layers from the scanning and signal lines.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA in view of Sakamoto, Kim, and Wakagi with the BCB insulation layers of Akiyama to shield the liquid crystal layers from the scanning and signal lines.

Response to Arguments

Applicant's arguments filed on 26 October 2004 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

(1) The applied prior art does not teach the claimed "forming a plurality of common electrodes in contact with the first passivation layer; forming a second passivation layer on the first passivation layer, wherein the second passivation layer is an inorganic material".

(2) The applied prior art does not teach the claimed "third insulation layer on the common electrodes and the second insulation layer, wherein the third insulation layer is an inorganic material; a second contact hole through the second and third insulation layers over a drain electrode of the thin film transistor".

(3) Regarding dependent claims, they are allowable because their base claims are allowable.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that claimed "forming a plurality of common electrodes in contact with the first passivation layer; forming a second passivation layer on the first passivation layer, wherein the second passivation layer is an inorganic material" is considered to be met by 1) Sakamoto teaches (entire patent, especially embodiment 2) in Drawings 3(a) and 3(b), the use of a common electrode, 3 (col. 8, line 23 through col. 10, line 7), on a protective overcoat layer, 12 (Applicant's the first passivation layer); an interlayer film, 13 (Applicant's second passivation layer) on the first passivation layer; and a pixel electrode, 14, on the second passivation layer to allow for manufacture of a color display that prevents color unevenness for better display performance (col. 4, lines 1-2), and 2) Kim teaches the second passivation layer is a nitride layer (Applicant's inorganic material) to prevent moisture penetration and resulting damage due to said moisture penetration (improves display service life) (col. 5, lines 30-48) per rejections above.

(2) It is respectfully pointed out that claimed "third insulation layer on the common electrodes and the second insulation layer, wherein the third insulation layer is an inorganic material; a second contact hole through the second and third insulation layers over a drain electrode of the thin film transistor" is considered to be met by APA in view of Sakamoto and Kim, wherein the first passivation layer is Applicant's second

insulation layer and the second passivation layer is Applicant's third insulation layer; in view of Wakagi who teaches in Figures 6 and 7 a device wherein a plurality of first contact holes through the first and second insulation layers over the common line; and a plurality of common electrodes on the second insulation layer, wherein the common electrodes contact the common line via the first contact holes to reduce losses in the driving voltage applied to the liquid crystal, by providing an active matrix substrate in which degradation of the metal electrode is prevented in a liquid crystal display device (col. 2, lines 6-10) per rejections above.

(3) It is respectfully pointed out that Applicant has not argued rationale for rejection of the dependent claims on their merits and has thereby acquiesced rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy L Rude
Examiner
Art Unit 2883

tlr

Frank G. Font
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Technology Center 2800